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REMARKS

The application has been reviewed in light of the Office Action dated July 25, 2008. Claims 1-36 and 38 are pending, with claim 37 having previously been cancelled, without prejudice or disclaimer. By this amendment, independent claims 1, 12, 23, 29, 35 and 36 have been amended to clarify the claimed subject matter. Accordingly, claims 1-36 and 38 remain pending upon entry of this amendment, with claims 1, 12, 23, 29, 35 and 36 being in independent form.

Claims 23-36 were rejected under 35 U.S.C. §112, second paragraph, as purportedly indefinite.

In response, the claims amended with particular attention to the points raised in the Office Action.

Withdrawal of the rejection of claims 23-36 under 35 U.S.C. §112, second paragraph, is respectfully requested.

Claims 1-3, 9, 10, 12-14, 20, 21, 23-25 and 38 were rejected under 35 U.S.C. 103(a) as purportedly anticipated by Mukherjee (US 2003/0123740 A1) in view of U.S. Patent No. 5,046,121 to Yonekawa et al. Claims 4 and 15 are rejected under 35 U.S.C. 103(a) as purportedly unpatenable over Mukherjee and Yonekawa in view of U.S. Patent No 5,793,893 to Kim. Claims 29-31 and 35 are rejected under 35 U.S.C. 103(a) as purportedly unpatentable over Mukherjee in view of Yonekawa. Claims 11 and 22 are rejected under 35 U.S.C. 103(a) as purportedly unpatentable over Mukherjee and Yonekawa in view of U.S. Patent No. 6,460,061 to Dick. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mukherjee in view of Yonekawa and further in view of Dick.

Applicant respectfully submits that the present application is allowable over the cited art,

for at least the reason that the cited art does not disclose or suggest the aspect of the present application of ***modifying valid coefficients, found in the search, to an invalid coefficient until the number of valid coefficients modified to invalid coefficients reaches a preset correction level.***

Mukherjee, as understood by applicant, proposes an approach for manipulating the spectral content of a block of pixels for compression, including *classifying each pixel within a selected block of pixels as relevant (nonmodifiable) or irrelevant (modifiable)*, applying a forward transform to the selected block to generate a coefficient block, and quantizing the coefficient block. Then, the non-zero coefficient values are modified *subject to a set of pre-determined constraints including a constraint that the relevant (nonmodifiable) pixels have a same value in an inverse transformation of the modified coefficient block as in the selected block*, and repeating for other coefficients having non-zero quantized values, in a reverse zig zag coefficient order.

Thus, in Mukherjee, modifications to the quantized coefficients (whereby non-zero quantized coefficients are altered to zero-quantized coefficients) are performed subject to a plurality of constraints, including the constraint that nonmodifiable pixels should not be changed (Mukherjee, [0055-0059], and figures 7-9). Nonmodifiable/relevant pixels may be an arbitrarily shaped object in the foreground of a source image, while modifiable/irrelevant pixels might be the background of the source image (Mukherjee, [0025]). In Mukherjee, a coefficient will only be modified if the modification does not alter the pixel values that correspond to the nonmodifiable pixels in an inverse transform of the selected block.

As an example, consider a block of pixels containing a source image, and the block consists entirely of 'relevant/nonmodifiable' pixels. Under Mukherjee, this block of pixels would

proceed directly through the standard block compression algorithm, *without undergoing a single modification*; that is, *no valid coefficients would be modified to invalid coefficients* (Mukherjee, [0068], and figure 6).

As second example, consider a block having a mix of relevant and irrelevant pixels. Under Mukherjee, a forward transform is performed on the block to generate a coefficient block, the coefficient block is quantized, the coefficients are scanned in reverse zigzag scan order to find the first one that is not quantized to zero, and this non-zero quantized coefficient is modified to zero, but only if a "feasible solution exists"; that is, only if modifying the non-zero coefficient will not effect relevant/nonmodifiable pixels in an inverse transform of the modified block ([0055-0059], and figures 7-9). Since the source image is a mix of relevant and irrelevant pixels, some of the non-zero coefficients found may be modified, while others may not be modified.

On the other hand, in the above-mentioned aspects of the present application, preset in the correction level register is a correction level indicating a number of corrections and/or modifications to the coefficients, a search of the quantized block data is performed in an inverse zigzag scan order in order to find valid coefficients, and ***valid coefficients found in the search are modified to invalid coefficients until the number of modifications reaches the preset correction level.*** Mukherjee simply does not disclose or suggest such aspect of the present application.

Yonekawa, as understood by the applicant, proposes an approach for performing tonal image data compression whereby once a coefficient block is obtained, a frequency of an AC component is determined as a cutoff frequency, and *all the AC components (coefficients) exceeding the cutoff frequency are 'cut-off' and are not coded, or are coded as 0*, i.e. they are not handled as substantial transform coefficients (Yonekawa, column 3, lines 60-68, column 4,

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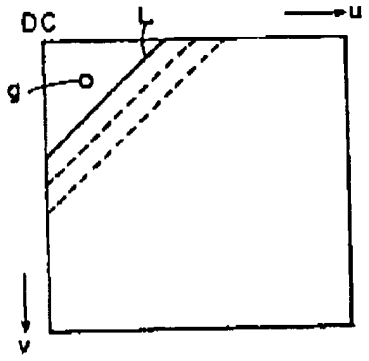
lines1-4).

It is contended in the Office Action that Yonekawa, column 9, lines 15-25 (reproduced below), purportedly discloses a predetermined number of data corrections and/or modifications to valid coefficients.

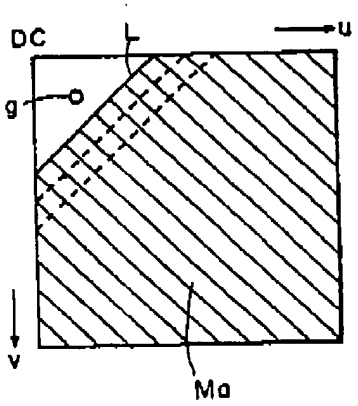
> FIG. 11 shows the number of cutoff frequencies C to be adaptively changed, with reference to the number of the transform coefficients to be cut.
>
> The upper limit number of the transform coefficients to be cut, which is determined by the aforementioned block characteristic value X, is designated as the boundary of MA. This upper limit cutting number Ma is designated by the hatched region (or area).

Figs 10 and 11 of Yonekawa are reproduced below:

F I G . 10



F I G . 11



Referring to Figure 10 of Yonekawa, the straight line L is the boundary value indicating the lower level cut-off frequency F. *All* transform coefficients, valid or invalid, with a frequency higher than the cut-off frequency are cut. This corresponds to *all* the transform coefficients on the right (the high-frequency side) of the boundary line L (column 8 lines 35-69, and column 9, lines 1-8).

Figure 11 of Yonekawa also shows the process, but does so in terms of the total number

of coefficients to be cut. That is, the total number of *all* coefficients with a frequency higher than a cut-off frequency (i.e. the shaded area to the right of the boundary line L) gives the upper-limit cutting number Ma, since all these coefficients are going to be cut (column 9 lines 15-25).

Thus, Yonekawa's upper limit cutting number is a total number of modifications to *all* coefficients, i.e. *both zero and non-zero coefficients*. It is ***NOT*** a correction level indicating a number of data corrections whereby ***valid coefficients only are modified to invalid coefficients.*** Some (or even all) of the transform coefficients above the cut-off frequency in Yonekawa might be a zero coefficients, but they will still be included in the upper-limit cutting number since they are to be cut.

In contrast, in the present application, such invalid coefficients are not modified and are not relevant for the purposes of the correction level.

Accordingly, applicant respectfully submits that Yonekawa does not disclose or suggest the above-mentioned aspects of the present application.

Dick and Kim, as understood by applicant, likewise do not propose the above-mentioned aspects of the present application.

The cited references, even when considered along with common sense and common knowledge to one skilled in the art, simply do not teach or suggest the aspect of the present application of ***modifying valid coefficients, found in the search, to an invalid coefficient until the number of valid coefficients modified to invalid coefficients reaches a preset correction level.***

Accordingly, Applicant respectfully submits that independent claims 1, 12, 23, 29, 35 and 36 and the claims depending therefrom, are patentable over the cited art.

The Office Action indicates that claims 5-8, 16-19, 26-28 and 32-34 would be allowable

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if rewritten to overcome the rejections under 35 U.S.C. 112. However, since independent claims 1, 12, 23, 29, 35 and 36 are submitted to be patentable over the cited art, no changes to the form of claims 5-8, 16-19, 26-28 and 32-34 are believed to be necessary.

In view of the remarks hereinabove, Applicant submits that the application is now in condition for allowance, and earnestly solicits the allowance of the application.

If a petition for an extension of time is required to make this response timely, this paper should be considered to be such a petition. The Patent Office is hereby authorized to charge any fees that are required, and to credit any overpayment, to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Respectfully submitted,

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PT/RJM